DOCUMENT RESUME

ED 296 217 CG 020 907

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TITLE The Short Form Luria-Nebraska Neuropsychological Battery in Assessment of Dementia.
PUB DATE 29 Aug 87
NOTE 9p.; Paper presented at the Annual Convention of the American Psychological Association (95th, New York, NY, August 28-September 1, 1987).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Clinical Diagnosis; *Depression (Psychology); *Mental Disorders; *Older Adults; *Test Validity
IDENTIFIERS Alzheimers Disease; *Luria Nebraska Neuropsychological Battery

ABSTRACT

This study sought to determine whether a short form of the Luria-Nebraska Neuropsychological Battery could discriminate between senile dementia of the Alzheimer's type and depression in a sample of elderly neuropsychiatric patients. The short form Luria-Nebraska includes 141 of the 269 items contained in the original version, with the Rhythm scale entirely deleted, the Memory and Intellectual scales included completely, and the remaining scales included with abbreviated numbers of items. The short form was administered to 104 elderly patients, 48 of whom had probable Alzheimer's disease, with the additional 56 meeting Diagnostic Statistical Manual of Mental Disorders-III criteria for major depression. Statistically significant differences were found between the Alzheimer's disease and depressed group on all 10 clinical scales included in the short form. The depressed group produced a completely normal profile when the critical level age and education adjustment procedure was applied. A discriminant analysis correctly classified 81.7% of the cases, with an estimated cross-validation correct classification rate of 75%. The view that neuropsychological tests do poorly at discriminating between dementia and depression in the elderly patients was not confirmed by this study. (ABL)

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THE SHORT FORM LURIA-NEBRASKA NEUROPSYCHOLOGICAL BATTERY IN ASSESSMENT OF DEMENTIA

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CG 020907

Presented at the 1987 American Psychological Association Annual Convention, August 29, 1987

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ABSTRACT

A short form of the Luria-Nebraska Neuropsychological Battery was administered to 104 elderly patients, 48 of whom had probable Alzheimer's disease, with the additional 56 meeting DSM-III criteria for major depression. Statistically significant differences were found between the Alzheimer disease and depressed group on all 10 clinical scales included in the short form. The depressed group produced a completely normal profile when the critical level age and education adjustment procedure was applied. A discriminant analysis correctly classified 81.7% of the cases, with an estimated cross-validation correct classification rate of 75%.

INTRODUCTION

The purpose of this study was that of determining whether a short form of the Luria-Nebraska Neuropsychological Battery could discriminate between senile dementia of the Alzheimer's type and depression in a sample of elderly neuropsychiatric patients. The short form Luria-Nebraska (McCue, Shelly and Goldstein, 1985) includes 141 of the 269 items contained in the original version, with the Rhythm scale entirely deleted, the Memory and Intellectual scales given completely, and the remaining scales given with abbreviated numbers of items. The design of the study involved a comparison between test profiles obtained by age and education matched groups of patients who were extensively evaluated at an inpatient psychiatric facility and were found to have either probable Alzheimer's disease or Major Depression. Thus, the study dealt with the issue of whether neuropsychological tests can discriminate between depression and dementia in the elderly.

SUBJECTS

The subjects consisted of 48 patients with well-diagnosed probable Alzheimer's disease, utilizing NINCDS ADRDA criteria, and 56 patients who met DSM-III criteria for Major Depression. None of the depressed patients met diagnostic criteria for dementia, nor did any of the demented patients meet DSM-III criteria for depression or other major mental disorders other than dementia. The mean age of the sample as a whole was 73.1 years, and the mean educational level was 10.2 years. The demented and depressed groups did not differ significantly with regard to age or education.

PROCEDURE

Each subject received an extensive neuropsychiatric evaluation including administration of structured interviews and a thorough neurological and neuroradiological evaluation aimed at confirming the diagnosis of depression or probable Alzheimer's disease. A data base of 240 cases was established, from which the cases described above were drawn. The short form Luria-Nebraska batteries were administered by trained technicians and computer scored. Mean profiles were plotted, and the two groups were compared utilizing discriminant analysis as well as comparisons between several single index summary scores.

RESULTS

The mean profiles for the two groups are presented in Figure 1. It may be noted that the mean score did not exceed critical level (an age and education adjusted cutoff for impairment) for any of the scales for the depressed group, but did so for all of the scales in the probable Alzheimer's disease group mean scores for the two groups are presented in Table 1. The discriminant analysis classified 81.7% of the cases, with 75% correct classification on cross validation. Table 2 presents the classification matrix yielded by the discriminant analysis. It was also found that the mean T score based on all of the 10 clinical scales had classificatory accuracy comparable to what was obtained in the case of the discriminant analysis.

CONCLUSIONS

The view that neuropsychological tests do poorly at discriminating between dementia and depression in the elderly patients was not confirmed by this study. Depressed elderly patients, on the average, performed normally for individuals of their age and educational levels on all the scales of the short form Luria-Nebraska, while the patients with probable Alzheimer's disease performed abnormally on all of these scales.

REFERENCE

McCue, M., Shelly, C., Goldstein, G. (1985). A proposed short form of the Luria-Nebraska Neuropsychological Battery oriented toward assessment of the elderly. International Journal of Clinical Neuropsychology 7(2):96-101.

Table 1

Means and Standard Deviations for LNNB Short Form Scales Obtained by the AD and Depressed Samples

	Alzheimer's Disease		Depression		
T Score	Mean	SD	Mean	SD	t
Motor	77.90	17.26	57.96	14.28	6.44***
Tactile	72.02	16.38	57.34	13.41	5.03***
Visual	79.35	11.05	66.04	11.90	5.88***
Receptive Speech	74.90	20.31	57.07	14.00	5.27***
Expressive Speech	71.19	19.89	48.64	13.50	6.84***
Writing	70.33	14.81	59.88	10.90	4.14***
Reading	71.11	15.34	57.04	11.69	5.34***
Arithmetic	81.81	33.92	57.77	17.99	4.61***
Memory	82.04	9.36	65.70	13.00	7.25***
Intellectual Processes	86.17	14.20	67.52	11.80	7.31***
Pathognomonic	78.33	16.04	60.73	11.20	6.56***
Mean of Clinical Scales	76.69	12.89	59.49	8.72	8.06***

*** $p < .001$

TABLE 2

CLASSIFICATION RESULTS BASED ON DISCRIMINANT FUNCTION ANALYSIS OF THE LNNB SHORT FORM

Actual Group	Number of Cases Classified Into Group	
	AD	Depressed
AD	40	8
Depressed	11	45

FIGURE 1. Mean LNNB Short Form Profiles for the AD and Depressed Groups